

WHAT IS CLAIMED IS:

1. An ink jet ink composition comprising water, a humectant, and a hyperbranched polymeric dye comprising a hyperbranched polymer having a dye chromophore pendant on the polymer chain or incorporated into the polymer backbone.

2. The composition of Claim 1 wherein said hyperbranched polymer having a dye chromophore pendant on the polymer chain has the formula:



wherein:

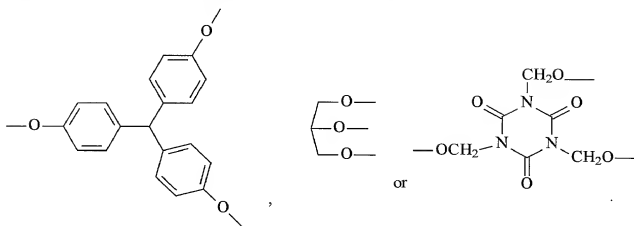
HB is a hyperbranched polymer core;
D is a dye moiety; and
n is an integer of at least 2.

3. The composition of Claim 2 wherein said HB is a polyamide, polyester, polyether, vinylic polymer, polyimine, polysiloxane, polyesteramide or polyurethane.

4. The composition of Claim 2 wherein said HB is prepared by a chain polymerization of a monomer of the formula $M^1-R^1-M^2_m$ wherein (i) R^1 is a linear or branched alkyl, carbonyl, or aromatic moiety; (ii), M^1 and M^2 are reactive groups that react independently of each other in which M^1 is a polymerization group and M^2 is a precursor of a moiety M^{2*} which initiates the polymerization of M^1 as a result of being activated; and (iii), m is an integer of at least 1.

5. The composition of Claim 2 wherein said HB is prepared by a condensation or addition polymerization of a monomer of the formula $M^3-R^2-M^4_p$

$-\text{C}_6\text{H}_4-$, $-\text{C}_6\text{H}_4-\text{O}-\text{C}_6\text{H}_4-$, $-\text{C}_6\text{H}_3$, $\text{N}(\text{CH}_2)_3-$, $-\text{C}_4\text{H}_8-$, $-\text{C}_6\text{H}_{10}-$,



5 10. The composition of Claim 1 wherein said hyperbranched polymer having a dye chromophore incorporated into the backbone thereof is a polyamide, polyester, polyether, vinylic polymer, polyimine, polyesteramide or polyurethane.

10 11. The composition of Claim 1 wherein said hyperbranched polymer having a dye chromophore incorporated into the polymer backbone is prepared by a chain polymerization of a monomer of the formula $\text{M}^1-\text{R}^7-\text{M}^2_m$ wherein R^7 is a linear or branched alkyl, carbonyl, or aromatic moiety containing a dye chromophore and M^1 , M^2 and m are defined as in Claim 4.

15 12. The composition of Claim 1 wherein said hyperbranched polymer having a dye chromophore incorporated into the polymer backbone is prepared by a condensation or addition polymerization of a monomer of the formula $\text{M}^3-\text{R}^7-\text{M}^4_p$ wherein R^7 is defined in Claim 11 and M^3 , M^4 and p are defined as in Claim 5.

20 13. The composition of Claim 1 wherein said hyperbranched polymer having a dye chromophore incorporated into the polymer backbone is prepared by a condensation or addition polymerization of a monomer of the

formula $R^8-M_q^5$ and $R^9-M_t^6$, wherein R^8 and R^9 are each independently a linear or branched alkyl or aromatic moiety, at least one of which contains a dye chromophore, and M^5 , M^6 , q and t are defined as in Claim 6.

5 14. The composition of Claim 1 wherein said dye chromophore is a mono- or poly-azo dye, basic dye, phthalocyanine dye, methine or polymethine dye, merocyanine dye, azamethine dye, quinophthalone dye, thiazine dye, oxazine dye, anthraquinone or metal-complex dye.

10 15. The composition of Claim 14 wherein said mono- or poly-azo dye is a pyrazoleazoindole.

15 16. The composition of Claim 14 wherein said metal-complex dye is a transition metal complex of an 8-heterocyclyazo-5-hydroxyquinoline.

17. The composition of Claim 1 wherein said humectant is diethylene glycol, glycerol or diethylene glycol monobutylether.

20 18. The composition of Claim 1 wherein said hyperbranched polymeric dye comprises about 0.2 to about 20 % by weight of said ink jet ink composition.